

WHAT IS CLAIMED IS:

1. A packet transmitting apparatus for transmitting, in order, packets belonging to a plurality of groups having priorities that differ from one another, comprising:

- 5 a queue controller for generating queues group by group and giving packet transmit privilege in order to elements constituting each of the queues; and
- a packet-transmit group decision unit for deciding that a packet transmit group is a group having the
- 10 highest priority among groups in which a packet corresponding to at least one queue element is awaiting to be transmitted;

 wherein said queue controller transmits a packet, which corresponds to a queue element having the packet

15 transmit privilege, in the queue of the packet transmit group that has been decided by said packet-transmit group decision unit.

2. The apparatus according to claim 1, wherein if a packet corresponding to a queue element having the

20 packet transmit privilege is not waiting to be transmitted, said queue controller transmits a packet waiting to be transmitted that corresponds to a queue element that is next in the order.

3. The apparatus according to claim 1, further

25 comprising:

 a group setting unit for adopting, as queue elements, combinations of input ports and quality classes added onto packets that enter from these ports,

and setting groups to each of which these queue elements belongs;

wherein said queue controller gives the packet transmit privilege, equally and in order in round-robin fashion, to each of the queue elements queue by queue.

4. The apparatus according to claim 1, further comprising:

a buffer for storing a packet, which is waiting to be transmitted, for every queue element; and

10 a request generator for generating a transmit request signal for every queue element corresponding to a buffer in which a packet waiting to be transmitted has been stored;

wherein said transmit-group decision unit
15 identifies groups in which a packet waiting to be transmitted exists based upon whether or not there is a transmit request signal from at least one of queue elements belonging to each of the groups, and decides that a group having the highest priority among these
20 groups is the packet transmit group.

5. The apparatus according to claim 1, further comprising:

an assured-data-quantity setting unit for setting a data transmission quantity, which is assured by a single
25 packet transmit privilege, for every queue element;

a monitoring unit for monitoring an actual transmission quantity of a packet corresponding to a queue element to which the packet transmit privilege has

been given; and

a control signal generator for outputting a control signal, which is for delivering the transmit privilege to the next queue element, when the actual data

- 5 transmission quantity has become equal to the assured data quantity;

wherein the queue controller gives the packet transmit privilege to the next queue element based upon the control signal.

- 10 6. The apparatus according to claim 5, wherein said control signal generator outputs the control signal when it is detected that all packets have been transmitted from a buffer before actual data transmission quantity exceeds the assured data transmission quantity.

- 15 7. The apparatus according to claim 1, further comprising:

data-transmission flowrate setting unit for setting data transmission flowrate, which is transmitted per set period of time, for every queue element;

- 20 means for monitoring actual data transmission flowrate per the set period of time for every queue element; and

packet-transmit inhibiting means for monitoring the actual data transmission flowrate for every queue

- 25 element, and generating a transmit-inhibit signal which inhibits transmission of a packet corresponding to the queue element, until the set period of time elapses, when the data transmission flowrate has become equal to

the set data transmission flowrate.

8. The apparatus according to claim 7, wherein said packet-transmit inhibiting means clears the actual data transmission flowrate to zero and cancels transmit

5 inhibit every said set period of time.

9. The apparatus according to claim 8, further comprising:

a buffer for storing a packet, which is waiting to be transmitted, for every queue element; and

10 a request generator for generating a transmit request signal for every queue element corresponding to a buffer in which a packet waiting to be transmitted has been stored;

wherein when the transmit-inhibit signal has been
15 generated with respect to a certain queue element, said request generator forgoes generation of the request signal even if a packet that is waiting to be transmitted corresponding to this queue element exists;

said packet-transmit group decision unit identifies
20 groups in which a packet waiting to be transmitted exists based upon whether or not there is a transmit request signal from at least one of queue elements belonging to each of the groups, and decides that a group having the highest priority among these groups is
25 the packet transmit group.